

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :
Keiichi TAKANASHI et al. :
Serial No. NEW : **Attn: Application Branch**
Filed May 31, 2001 : **Attorney Docket No. 2001-0689A**

APPARATUS FOR PULLING A SINGLE
CRYSTAL

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents,
Washington, DC 20231

Sir:

Prior to examination of the above-referenced U.S. patent application please amend the application as follows:

IN THE CLAIMS

Please amend the claim as follows:

3. (Amended) An apparatus for pulling a single crystal according to Claim 1, comprising an averaging means to average level positions measured by the level position measuring means.

Please add the following new claim:

6. An apparatus for pulling a single crystal according to Claim 2, comprising an averaging means to average level positions measured by the level position measuring means.

REMARKS

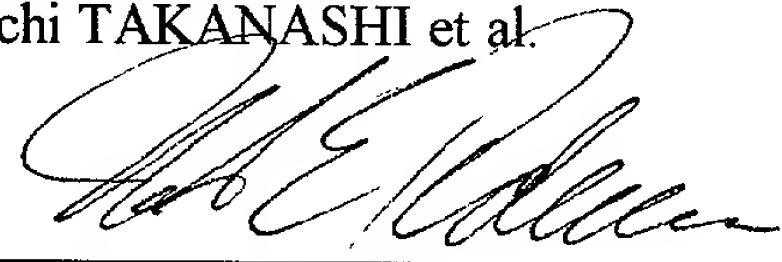
The present Preliminary Amendment is submitted to delete the multiple dependency of the claims, thereby placing such claims in condition for examination and reducing the required PTO filing fee.

Attached hereto is a marked-up version of the changes made to the claim by the current Preliminary Amendment. The attached page is captioned "**Version With Markings to Show Changes Made**".

Respectfully submitted,

Keiichi TAKANASHI et al.

By



Nils E. Pedersen
Registration No. 33,145
Attorney for Applicants

NEP/krl
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
May 31, 2001

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ACCOUNT NO. 23-0975

Version with Markings to
Show Changes Made

What is claimed is:

1. An apparatus for pulling a single crystal, which has a lifting means of a crucible and a level position controlling means to control the level position in the crucible by calculating a crucible ascent speed based on a decrease in volume of a melt with pulling a single crystal to control the lifting means, comprising:

a reference reflector arranged inside an apparatus body;

a level position measuring means to measure an actual level position by detecting a mirror image position of the reference reflector reflected in the melt surface using an optical device arranged outside the apparatus body;

a crucible ascent speed adjustment value calculating means to calculate an adjustment value of the crucible ascent speed based on an output from the level position measuring means;

an adjustment value adding means to add the adjustment value to the crucible ascent speed; and

the level position controlling means to control the level position in the crucible by controlling the lifting means based on an output from the adjustment value adding means to control the crucible ascent speed.

2. An apparatus for pulling a single crystal according to Claim 1, comprising an adjustment value addition propriety judging means to judge the propriety of adding the adjustment value to the crucible ascent speed, based on a diameter of a pulling crystal, a level position measured by the level position measuring means, a distance between the crystal and the reference reflector, and a crucible rotational speed.

3. An apparatus for pulling a single crystal according to Claim 1 ~~or 2~~ comprising an averaging means to average level positions measured by the level position measuring means.

4. An apparatus for pulling a single crystal according to Claim 1, wherein the optical device constituting the level position measuring means is also used as an optical device for measuring a crystal diameter.

5. An apparatus for pulling a single crystal according to Claim 1, comprising an automatic updating means to automatically work out a conversion equation for

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CRYSTAL

CLAIM OF PRIORITY UNDER 35 USC 119

Assistant Commissioner for Patents,
Washington, DC 20231

Sir:

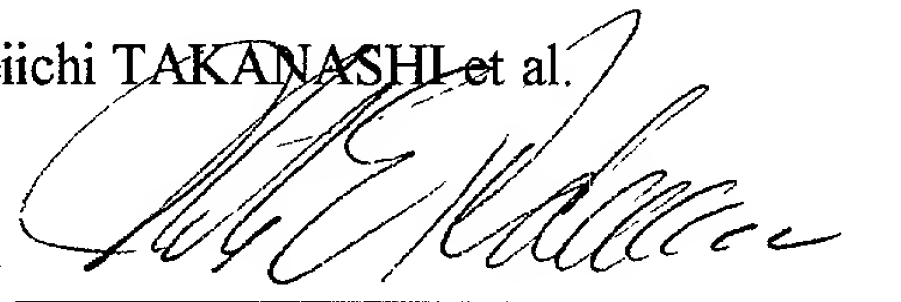
Applicants in the above-entitled application hereby claim the date of priority under the International Convention of Japanese Patent Application No. J.P.A. 161371/2000, filed May 31, 2000, as acknowledged in the Declaration of this application.

A certified copy of said Japanese Patent Application is submitted herewith.

Respectfully submitted,

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